

## WHAT IS CLAIMED IS:

## 1. An optical antenna comprising:

arrangement means for mounting at different positions a  
5 plurality of optical transmitting and receiving means for  
radiating an outgoing optical signal to space, or for receiving  
an incoming optical signal from the space; and

an optical system for transmitting, when the optical signal  
is radiated from said optical transmitting and receiving means,  
10 the optical signal to the space with refracting the optical signal  
to spherical waves, and for focusing, when the optical signal  
arrives from the space, the optical signal onto said optical  
transmitting and receiving means.

## 15 2. An optical antenna comprising:

a plurality of optical transmitting and receiving means  
for radiating an outgoing optical signal to space, or to receive  
an incoming optical signal from the space;

arrangement means for mounting said plurality of optical  
20 transmitting and receiving means at different positions; and

an optical system for transmitting, when the optical signal  
is radiated from said optical transmitting and receiving means,  
the optical signal to the space with refracting the optical signal  
to spherical waves, and for focusing, when the optical signal  
25 arrives from the space, the optical signal onto said optical  
transmitting and receiving means.

3. The optical antenna according to claim 2, further comprising  
control means for simultaneously driving said plurality of  
30 optical transmitting and receiving means.

4. The optical antenna according to claim 2, further comprising control means for driving any desired optical transmitting and receiving means of said plurality of optical transmitting and  
5 receiving means.

5. The optical antenna according to claim 2, further comprising a driving mechanism for making the positions variable of said optical transmitting and receiving means mounted on said  
10 arrangement means.

6. The optical antenna according to claim 2, further comprising selecting means for selecting a desired optical fiber from a plurality of optical fibers mounted on said arrangement means,  
15 and for connecting the optical fiber selected to said optical transmitting and receiving means.

7. The optical antenna according to claim 6, wherein said selecting means selects an optical fiber corresponding to a  
20 position of an object to be measured.

8. The optical antenna according to claim 7, wherein said selecting means makes a position or angle of said optical system variable in response to changes in position of the object to  
25 be measured.

9. The optical antenna according to claim 7, wherein said selecting means rotates, when a wedge prism is installed on an object to be measured side of said optical system, the wedge  
30 prism in response to changes in position of the object to be

measured.

10. The optical antenna according to claim 7, wherein said  
selecting means carries out gimbal driving of said optical system  
5 and arrangement means in response to changes in position of the  
object to be measured.

11. The optical antenna according to claim 1, wherein said optical  
system comprises a first lens having positive refraction power,  
10 a second lens having negative refraction power, a third lens  
having positive refraction power, and a fourth lens having  
positive refraction power, and wherein said first lens, said  
second lens, said third lens and said fourth lens are disposed  
in this order from a side of the object to be measured.

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